

Frontiers of Fruit in California: An Overview of New and Rediscovered Fruit Types With Potential for Commercial Cultivation

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Greengage (*Prunus domestica*)



Mirabelle (*Prunus domestica*)



Tejocote (*Crataegus pubescens*)



Sweet quince (*Cydonia oblonga*)



Goji (*Lycium barbarum*)



PNVA persimmon (*Diopyros kaki*)



Nectarplum (*P. persica* x *P. salicina*)



Peacotum (*P. persica* x *P. armeniaca* x *P. salicina*)



Cherum (*P. avium* x *P. salicina*)

Greengage plum (*Prunus domestica*)

- Most delicious and intensely flavored plum
- Native to Subcaucasus; brought to Italy
- Grown on 2,000 ha in SW France (Tarn-et-Garonne)
- Imported from New Zealand in February
- Significant cultivation in U.S. in 19th century
- Formerly grown for canning in California
- Now grown on c. 10 ha in CA, OR, NY



'Old Greengage', Morgan Hill, CA



Vergnes Orchard, near Moissac, France



1920s California greengage can label

Challenges

- Long juvenile period
- Pollination
- Soft when ripe
- Cracks in rain
- Varietal confusion



'Stanley' plum pollinator for greengage



Main greengage cultivars

- **'Old Greengage'**: 'Reine-Claude Dorée', type of the class. Numerous selections in France.
- **'Cambridge' gage**: Seedling of 'Old Greengage', very similar; originated, 1920 Cambridge, England; self-incompatible, but more consistent bearer than other gages.
- **'Bavay's gage'**: Seedling of 'Old Greengage', 1841. Three weeks later, used for preserves, canning in France; ripens and tastes just like 'Old Greengage' in Morgan Hill. Self-fertile.



'Old Greengage'



'Bavay's gage'



'Cambridge gage'

Greengage prospects

Need more pioneer orchards / test plantings

Specialty crop for CA and OR coastal valleys

Shipping to high-end markets



Animalitos Farm (Susan Stover and Tony Sadoti), Sebastopol, CA



Ayers Creek Farm (Anthony and Carol Boutard), Gaston, OR



Red Jacket Orchards (Joe Nicholson), Geneva, NY



Bunyard Orchard (Andy Mariani), Morgan Hill, CA



Mirabelle de Nancy, Paris, France

Mirabelle plums (*Prunus domestica*)

- Sweet, snackable; traditional for Europeans; novel for Americans
- Cultivation: grown on 3,000 ha in Europe; 2,000 ha in Lorraine (France); 8 ha in OR, CA, NY; “partially self-fertile”
- Uses: preserves, tarts, eaux-de-vie; fresh



Mirabelle de Nancy, Andy's Orchard, Morgan Hill, CA

- Mirabelle cultivars: ‘De Nancy’, ‘De Metz’; ‘Parfumée de Septembre’
- Challenges: difficult to propagate; small fruit size; unfamiliarity; profits from processing dubious
- Grown commercially by: King Estate, Eugene, OR; Ayers Creek Farm; Bunyard Orchard; Red Jacket Orchards; Singer Farms, Appleton, NY
- For chefs; farmers and local markets; upscale markets; clamshells



Bunyard Orchard (Andy Mariani), Morgan Hill, CA



‘Mirabelle de Nancy’, Ayers Creek Farm (Anthony and Carol Boutard) , Gaston, OR

Tejocote (*Crataegus pubescens*)

Traditional in Christmas *ponche* (with guava, sugar cane, rum) for highland Mexicans; \$8-\$10/lb retail in U.S.

Native to Mexican highlands, cultivated on 700 ha, predominantly in Puebla

Used to adorn Day of the Dead altars; in Christmas piñatas; for making jams, jellies and fruit cheese; for candying; peeled and preserved in heavy syrup



'Pecoso de Huejotzingo', Serrato Groves



Serrato Groves (Jaime Serrato), Pauma Valley, CA

Tejocote (Mexican hawthorn)

- Cultivars: selections made in Mexico; large orange and small red (tastier) fruit types; seedlings often thorny
- Challenges: Need to hold fruit until Christmas; germplasm availability; Mexico has applied to export irradiated fruit
- Benefit of U.S. cultivation: profits, diminished smuggling (pests, diseases)



Large orange and small red fruit types



Maddock Nursery, Fallbrook, CA



Serrato Groves, Pauma Valley, CA

Peruvian “membrillo manzano” (*Cydonia oblonga*)

- Hispanics love fresh quince; accessible for non-cooks; novel
- Origin: Noel Ugarteche brought cuttings from the Majes Valley of southern Peru, near Arequipa, to Simi Valley, Calif., c. 1990.
- Size small to medium; shape round, with pronounced ribbing; light pubescence; flesh texture fine, juicy, does not brown when cut
- Season: early, September in Simi Valley (Ventura County, CA)
- Flavor: 15° Brix, tender, juicy, non-astringent, good balance of sweetness and acidity; edible fresh with pleasure.



Noel Ugarteche and Edgar Valdivia
with tree of “membrillo manzano”,
Simi Valley, 1997



‘Smyrna’ quince: In Turkish, “to eat the quince” means “to get into some serious trouble.”

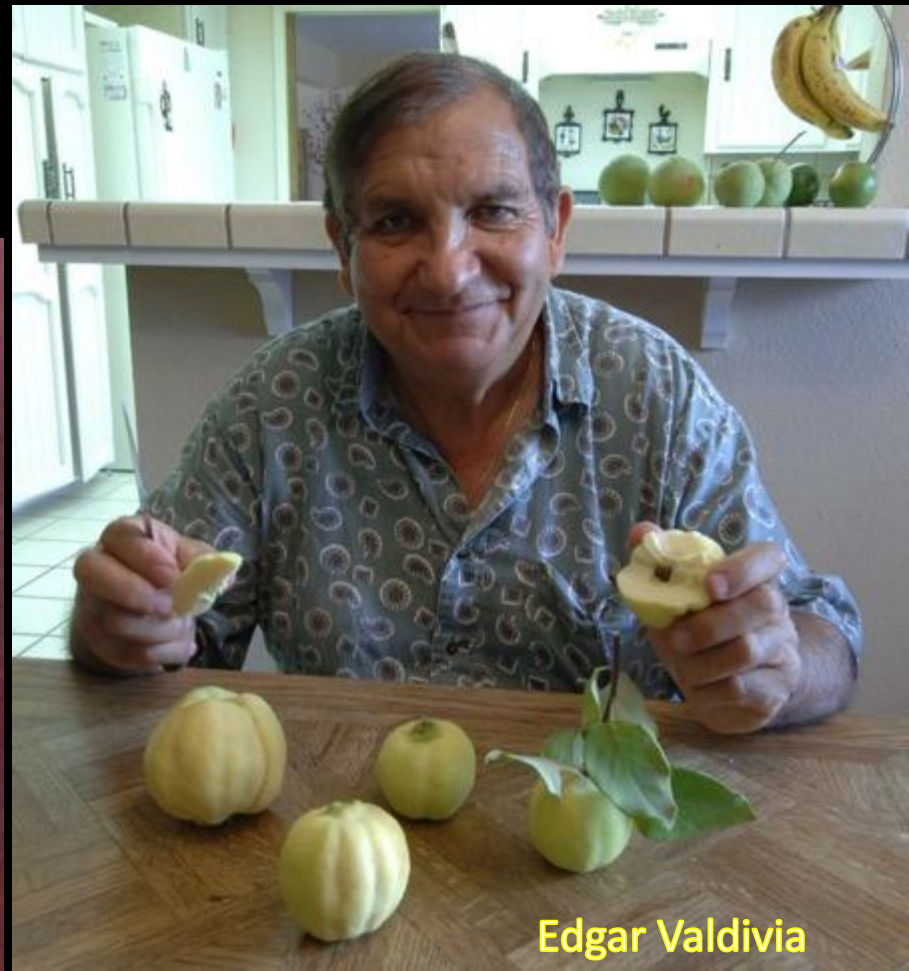




Top: 'Ekmek' quince, Corvallis; below: Peruvian apple quince = 'Karp's Sweet'



- Only backyard and farmers market so far.
- Questions: Suitable for processing? Shelf life?
- Needs heat and long growing season
- Challenges: sunburn, fire blight, codling moth
- Germplasm: Raintree Nursery; USDA-Corvallis has many new accessions of quince potentially edible fresh, need testing in suitable climate



Edgar Valdivia



Goji (*Lycium barbarum*)

- Why grow: perceived health benefits; good flavor fresh; novel
- Cultivation: 70,000 ha in Ningxia Hui, China, for dried and juice; 10 ha (?) in US and Canada

Top: goji orchard and drying yard, Ningxia Hui autonomous region, China
Bottom: goji planting, Burkart Organic Farm, Dinuba, CA



Dried goji berries supposedly from Tibet



- Germplasm: ‘Ning-qi #1’ leading Chinese cultivar, at One Green World, OR (+ ‘Crimson Star’). Can seedlings (typically have small fruit, thorny tree) be adapted through selection to U.S. growing areas?
- Adapted areas: intermountain West (Idaho, eastern WA?)
- Challenges: small fruit size = high labor costs, lack of machine-harvestable cultivar; requires bird netting; poor shelf life; flaky “nurseries” and medical claims

Goji grown by Chuck Garrigus, Selma , CA; top: Beverly Hills farmers mkt





Pollination variant, nonastringent persimmons (*Diospyros kaki*)

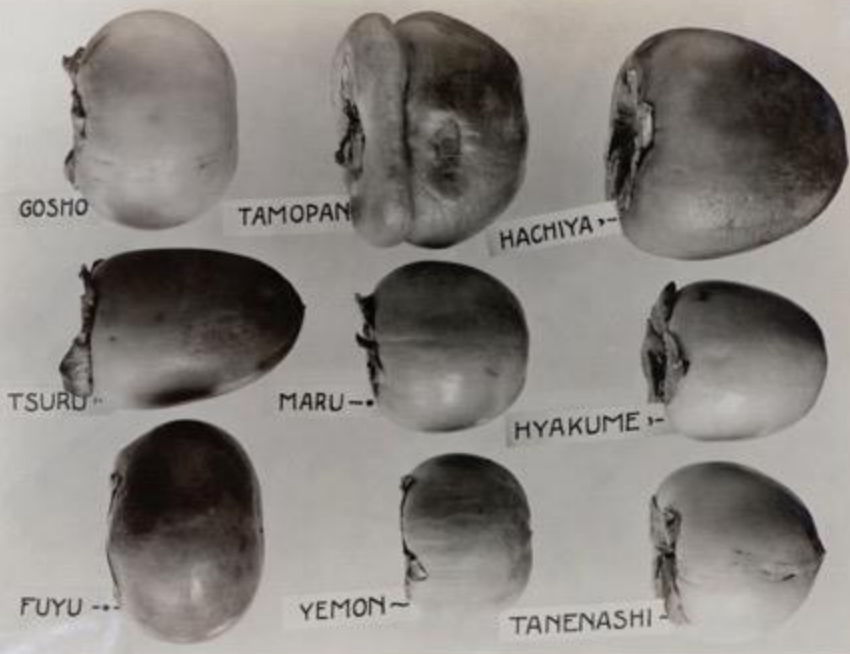
- Why: distinctive, rich flavor; best eaten firm but buttery; connoisseurs, older Japanese, chefs love them
- More recent PVNA cultivars still grown in Japan, 1,400 ha (1997); a few old plantings (10 ha?) in Placer County and San Joaquin Valley; backyard favorites in California
- Cultivars: “Maru’ group = “round”; flesh dark “cinnamon”; good pollinator

Top: ‘Maru’ persimmon, Otow Orchards, Granite Bay, CA

*Commercial pack of persimmons
Upper box, Hyakume, lower, Tamopan.*



Tosh Kuratomi, Otow Orchards, Granite Bay, CA

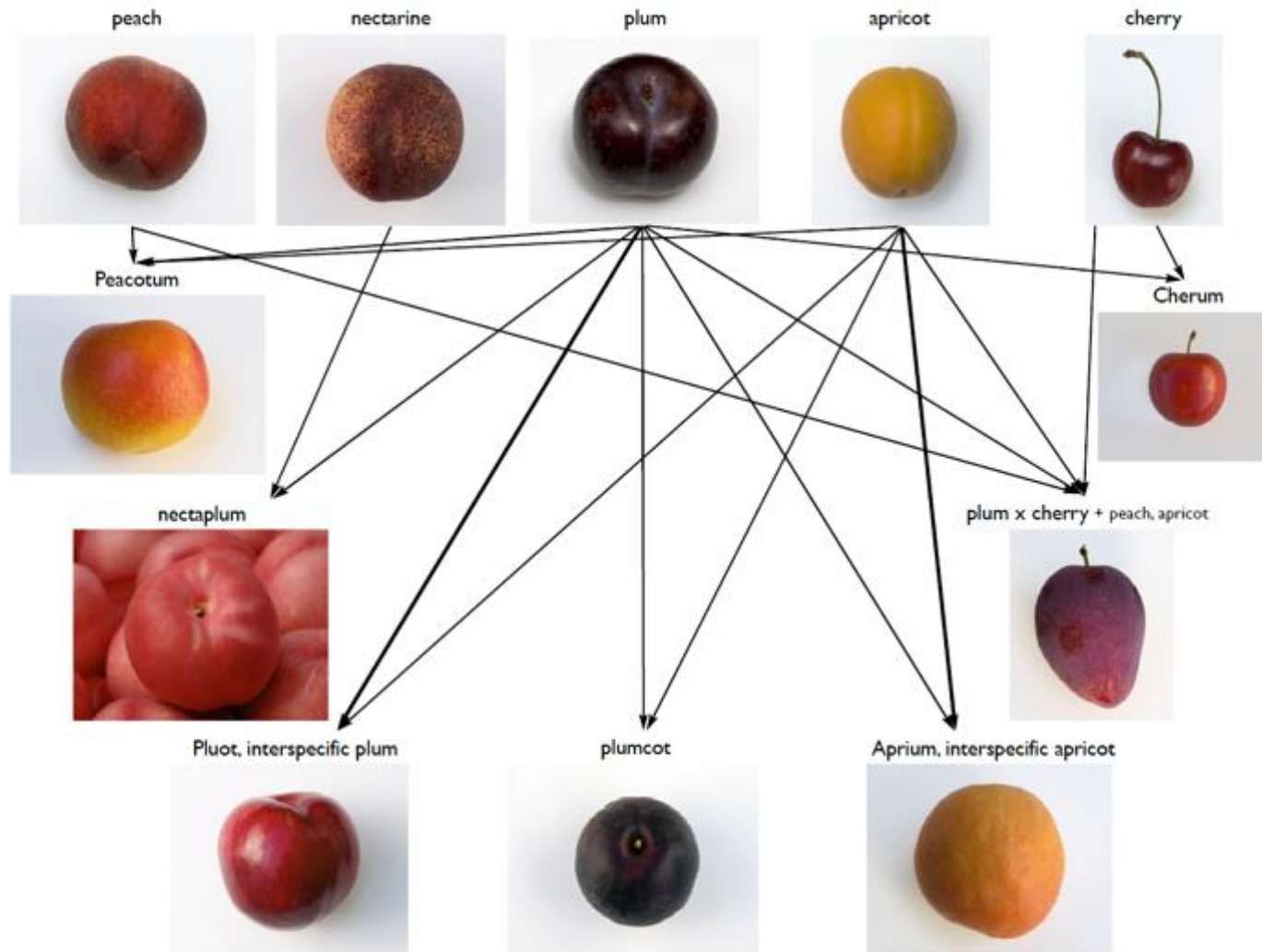


- 'Tsurunoko' = "Son of a stork", aka 'Chocolate'; size medium, conical, skin bright orange-red, flesh dark brown when pollinated; conical, season early.
- 'Hyakume' = "3/4 pound"; medium to large, skin buff yellow; flesh dark cinnamon when pollinated; excellent flavor; sometimes ripened with alcohol.
- Germplasm resources: USDA-Winters, Orange County Nursery, L.E. Cooke; Duane Wieden.
- Challenges: pollination required but uncertain; cracking; relatively soft flesh; varietal confusion.
- Needed: systematic germplasm acquisition, study, outreach to growers.

Top: persimmon varieties in California, 1920s; lower left: Jeff Rieger, Santa Monica farmers market; lower right: Rieger's 'Tsurunoko' persimmons.



Novel interspecific stone fruit hybrids from Zaiger Genetics





Nectarplum / peach-plum (*P. persica* x *P. salicina*)

- Bred by Zaiger Genetics, Modesto, CA.
- 'Tri-Lite' peach-plum ('O'Henry' peach x ['Red Beaut' plum x unknown peach], clingstone, white flesh, low acid, for canning, patented 1993, still around, but never caught on; season June in Reedley.
- 'Spice Zee' Nectarplum introduced c. 2003: mauve skin, freestone, snow-white flesh, self-fruitful; classic balance of sweetness and acidity; grown 20 ha; combines flavors of both fruits; season late July.



'Tri-Lite' peach plum >

Top and lower right: 'Spice Zee nectarplum, San Francisco Ferry Plaza farmers market, 2006; lower left: Richard Burkart, Hollywood farmers market, July 25, 2010.





'Bella Gold' Peacotum, from Dave Wilson Nursery, 2010

Peacotums (*P. persica* x *P. armeniaca* x *P. salicina*)

- Bred by Zaiger Genetics, Modesto, CA
- Three cultivars: 'Bella Gold', 'Bella Cerise' (mid-late June); 'Bella Royale' (early August). Commercial proprietary to Kingsburg Orchards and Family Tree Farms; farmers market sales allowed.
- Marketed as "colored apricots" in Velvet series or as colored Apriums.
- 'Bella Gold' patented 2007: ('Geo Pride' Pluot x 'Flavor Queen' Pluot) x unknown peach (?); grown on 40 ha; marketed as Gold Velvet apricot, Selling point blush, firmness; small fruit size.
- Ben-Dor Fruits in Israel has a line of "colored apricots"
- 'Dapple Fire', grown commercially, marketed as a Pluot, described by Leith Gardner as a Nectacotum.

'Bella Royale' and unnamed black Peacotum, Modesto, CA, 2004



'Bella Royale' Peacotum, grown by Fitz Kelly, Reedley, 7/28/10





Cherums (P. avium x P salicina) and Plerries (P salicina x P. avium)

- Bred by Zaiger Genetics, Modesto, CA.
- Cherums: cherry-like fruits of larger size that can be harvested over an extended season.
- Plerries: plum-like fruits with the high sugar and intense flavor of cherries.
- Just starting to be planted commercially (4 ha Plerries in 2010, will be marketed like plums), but test trees are out there.





Plum x cherry x peach x apricot
What will it be called?



Australian finger lime (*Microcitrus australasica*): “citrus caviar”





Australian finger lime

- Native to the rainforests of eastern Australia, cultivated on a modest scale there.
- Currently grown on c. 20 ha in CA
- Challenges: thorny trees a bear to harvest; small fruit size when trees are young; fruit falls off tree before reaching salable size
- Prime season Oct.-Jan. in San Joaquin Valley, Riverside; extended season on coast?
- \$10 wholesale for a 6 oz clamshell
- Used by high-end chefs to garnish seafood, desserts; great on Fuyus
- Only one selection available in CA through CAPP; several growers hoping to obtain elite material from Australia
- Fruit can have seeds when grown next to citrus with viable pollen
- What is the demand for this fruit?



Mirabelle de Nancy, Bunyard Orchard, Morgan Hill